State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210
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Michael O. Leavitt
Governor

Lowell P. Braxton
Division Director

M/039/002

FACSIMILE COVER SHEET

DATE: November 23. 1999

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 6

TO: Arjun Rao

FAX NUMBER: 485-4830

FROM: Joelle / Tony

Minerals Reclamation and Development Program

PHONE: (801) 538-5291
FAX: (801) 359-3940

SUBJECT: Surety Estimate - Redmond Minerals
M/039/002

REMARKS:

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RECLAMATION SURETY ESTIMATE

Redmond Minerals, Inc. *last revision 08/31/99*

Redmond Minerals Mine *filename redmond2.wb2 page "estimate"*

M/039/002 ***Sanpete/Sevier County***

Prepared by Utah State Division of Oil, Gas & Mining

-This estimate is based on information from the LMO-NOI received September 15, 1998, the responses received February 19, 1999, and June 30, 1999, and from the August 24, 1999 discussion at DOGM.

-Labels used in this estimate are taken from the Treatments Map received August 26, 1999.

-Structures & facilities within SMP-1, SMP-2 will remain for the post-mine land use of farming, no reclamation - VARIANCE

-Reclamation of salt mine SM-1, & the region at SM-2 including OB-1 & OB-2 will not be required -Pre-Law- VARIANCE

-Revegetation success at clay mines CM-1, CM-2, CM-3, CM-4, CM-5, CM-6 will not be required - no premining vegetation - VARIANCE

-Revegetation success at clay waste CW-1, CW-2, CW-3, CW-4, CW-5 will not be required - no premining vegetation - VARIANCE

'-Broadcast seeding & composted manure will be required at CM-1 through CM-6, CW-1 through CW-5, but no revege success std.

-Reclamation of old mine disturbances OM-1 & OM-2 will not be required - Pre-Law disturbances - VARIANCE

-Reclamation of mine dump MD-2 will not be required - Pre-Law disturbance - VARIANCE

-Reclamation of mine dump MD-1 will be required - ripping, composted manure, & drill seeding

-Clay hills w/variance borders on map will need to be included in an amendment if they will be disturbed (1.52, 4.35, 0.65 acres)

-Salt waste piles SW-1,SW-2,SW-3,SW-4 used as pit backfill, areas ripped & flooded, receive 6"soil, composted manure & seeded

-Brine ponds BP-1,BP-2,BP-3 will be regraded, 12 inches soil, composted manure & seeded

-Clay pile areas CP-1, CP-2, CP-3, CP-4 will be disked, receive composted manure (5 ton/acre), & seeded

-Overburden areas OB-3, OB-4, OB-5, OB-6, OB-7 will be disked, receive composted manure & seeded

-Garbage dump GD-1 & GD-3 are temporary scrap storage; GD-2 is a pit dump which will be backfilled & revegetated

-New mine area NM-1 & Gravel pit GP-1 will receive topsoil, composted manure & seeded

-Unidentified future mining area of 10 acres will receive topsoil, composted manure & seeded

-Exploration area (1.66 acre) will be disked, receive composted manure & seeded

ESTIMATED TOTAL AFFECTED AREA (includes grandfathered & adjacent areas) =	**138.39**	**acres**
ESTIMATED TOTAL AFFECTED PERMIT AREA (includes 10 acre future mining) =	**148.39**	**acres**
ESTIMATED TOTAL AREA INCLUDED IN VARIANCE REQUESTS =	**69.38**	**acres**
ESTIMATED AREA ADJACENT TO MINE FEATURES INCLUDED IN VARIANCE =	**7.42**	**acres**
ESTIMATED MINE FEATURE AREA INCLUDED IN VARIANCE REQUESTS=	**61.96**	**acres**
ESTIMATED INDIVIDUAL MINE FEATURE DISTURBANCES BEING RECLAIMED =	**26.27**	**acres**
ESTIMATED DISTURBANCE ADJACENT TO MINE FEATURES BEING RECLAIMED =	**40.22**	**acres**
ROADS BEING RECLAIMED =	**2.52**	**acres**
DOGM REQUIRED RECLAMATION/RESEEDING =	**11.08**	**acres**
PROPOSED FUTURE MINING AREA TO BE RECLAIMED =	**10.00**	**acres**
ESTIMATED TOTAL PERMIT AREA BEING RECLAIMED =	**90.1**	**acres**

Activity	Quantity	Units	$/unit	$	notes
Safety gates, signs, etc. (mtls & installation)	20.0	sum	50	1,000	*(1)*
Demolition of buildings & facilities	30,000	CF	0.25	7,500	*(2)*
Debris & equipment removal - trucking	139	trips	48	6,667	*(3)*
Debris & equipment removal - dump fees	1111	CY	13.75	15,278	*(4)*
Debris & equipment removal - loading trucks w/FE loader	24	hours	176	4,224	*(5)*
Demolition & debris removal - general labor	72	hours	15	1,080	*(6)*
Regrading clay mine slopes - 100 ft push	13,713	CY	0.31	4,251	*(7)*
Regrading GD-2	11,111	CY	0.31	3,444	*(7)*
Regrading salt waste areas SW-1 thru SW-4	49,529	CY	0.31	15,354	*(7)*
Regrading brine ponds	10,164	CY	0.31	3,151	*(7)*
Ripping brine ponds - D10N 1.0 mph	1.1	acre	291	314	*(8)*
Flooding brine ponds (water truck)	8.0	hrs	79	632	*(9)*
Disking areas with existing topsoil	55.9	acre	34	1,882	*(10)*
Creating safety berms or barriers around highwalls	2,000	LF	0.1	200	*(11)*
Ripping roads to be reclaimed - dozer	2.5	acre	565	1,424	*(8)*
Regrading roads to be reclaimed - dozer	2.5	acre	397	1,000	*(12)*
Replacing topsoil -truck, FE loader & dozer	34,304	CY	2.19	75,125	*(13)*
Composted manure (5 ton/acre) all areas seeded	90.1	acre	150	13,513	*(14)*
Drill seeding - revegetation success required	79.0	acre	220	17,382	*(15)*
Broadcast seeding(CM-1--6, CW-1--5, no reveg std.)	11.1	acre	170	1,884	*(16)*
General site cleanup & trash removal - 10% of total	9.0	acre	50	450	*(17)*
Equipment mobilization(dozer, FE loader, 3 trucks)	5	equip	500	2,500	*(18)*
Reclamation Supervision	10	days	372	3,720	*(19)*
		Subtotal		181,976	
10% Contingency				18,198	
		Subtotal		$200,173	
Escalate for 5 years at 3.27% per yr				34,940	
		Total		$235,113	
	Rounded surety amount in yr 2004-$			**$235,100**	

Average cost per reclaimed acre = $2,610

74		Rounded surety am	in yr 2004-$	**$235,100**
75	Average cost per reclaimed acre =	$2,610		

RECLAMATION SURETY ESTIMATE
Redmond Minerals, Inc. *last revision 08/31/99*
Redmond Minerals Mine *filename redmond2.wb2 page "estimate"*
M/039/002 ***Sanpete/Sevier County***
Prepared by Utah State Division of Oil, Gas & Mining

notes

(1) DOGM lump sum assumed

(2) Means Heavy Construction Cost Data 1999, 020-604-0100, mix of bldg. types, avg., excluding dump fees
(3) Means 1999, 020-620-5100, $0.48/mile for >8CY truck; assumed 100 miles round trip
(4) Means 1999, 020-612-0100, dump charges, typical urban city,tipping fees only, bldg construction mtls, $55/ton, assume 4 CY/ton
(5) Rental Rate Blue Book 3Q/99, Cat 988B, 7CY, & Means 1999, Crew B-10U
(6) DOGM assumed wage for unskilled general labor

(7) Means 1999 & Blue Book 3Q/99: Cat D10N, U, mtl 2550 lb/CY, 100 ft push
(7) Means 1999 & Blue Book 3Q/99: Cat D10N, U, mtl 2550 lb/CY, 100 ft push
(7) Means 1999 & Blue Book 3Q/99: Cat D10N, U, mtl 2550 lb/CY, 100 ft push
(7) Means 1999 & Blue Book 3Q/99: Cat D10N, U, mtl 2550 lb/CY, 100 ft push

(8) Means 1999 & Blue Book 3Q/99: Cat D10N, U, multi shank rippers, speed 1.0 mph
(9) Rental Rate Blue Book 3Q/99, On highway, 4,000 gal, 250 hp, diesel water tanker ($32/hr & $13.05/hr) & Means 1999, Crew B-9A ($33.8

(10) Redmond estimate of 77 acres/week at $2590
(11) Means 1999 & Blue Book 3Q/99: Cat D10N, U, mtl 2550 lb/CY, 50 ft push, avg vol 0.5CY/LF-berm assumed

(8) Means 1999 & Blue Book 3Q/99: Cat D10N, U, multi shank rippers, speed 0.5 mph
(12) Means 1999 & Rental Rate Blue Book 3Q/99: Cat D10N, U, mtl 2550 lb/CY, 75 ft push, 1 ft depth

(13) Means 1999 022-266-2010: hauling excavated or borrow material, off highway hauler, 22 CY, 1000 ft round trip, no loading included

(14) DOGM general estimate - manure $16/ton delivered + $14 /ton/acre spreading
(15) DOGM general estimate - seed $200/acre, tractor & drill $20/acre
(16) DOGM general estimate - broadcast seeding

(17) DOGM assumed cost
(18) DOGM general estimate - nearest location = Richfield ~25 miles
(19) Means 1999, 010-036-0180, project manager, minimum $1860/wk

Explanation for Items in ESTIMATE sh

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Demolition of buildings and facilities
Most buildings and structutes will remain due to the variance sought based on post-mining land-use (farming operations)
Some equipment needs to be disposed (although it will have a monetary value and can be sold)

		Length (ft)	Width (ft)	Height (ft)	Volume (cu ft)	Volume (cu yds)
Equipment						
-Average volume of typical equipment (screens, crushers, etc.)		15.0	10.0	8.0	1200.0	44.4
-Number of different types of equipment	25.0				**30000.0**	**1111.1**

Regrading Slopes

The main features to be regraded are all the clay mines (CM1-8), garbage dump (GD2) and the salt waste piles (SW1-4)

Clay Mines:

Total Area (acres)	8.5
Average depth (feet)	20.0
Maximum volume of material mined (cu. yds)	274266.7

The slope of the pits vary in each pit and between pits depending upon the nature of the clay vein.
It is estimated that less than 5% of the material mined needs to be put back in the pits to reduce the slopes to less than 45 degrees

Amount of material to be handled for grading the clay pits (cu.yds): **13713.3**

	Length (ft)	Width (ft)	Height (ft)	Volume (cu ft)	Volume(cu yds)
Garbage dump (GD2)	200.0	100.0	15.0	300000.0	**11111.1**

	Area (acres)	Average Ht (ft)		
Salt Waste (SW1)	0.5	10.0	200376.0	7421.3
Salt Waste (SW2)	1.1	10.0	479160.0	17746.7
Salt Waste (SW3)	1.2	10.0	522720.0	19360.0
Salt Waste (SW4)	0.3	10.0	135036.0	5001.3
	total salt waste volume			**49529.3**

Total Volume of material to be moved to regrade slopes: **74353.8**

Disking Areas to be Reclaimed

The soil is quite loose (not compacted) in most areas to be reclaimed and so disking is sufficient. Only road areas and salt waste areas need to be ripped
Two estimates were obtained from independent contractors about the cost of renting a tractor and a disk for disking areas to be reclaimed
It is estimated that it would be possible to disk about 77 acres in 1 week

	$/hp/hr	hp	hrs/week	$/hr	$/week
Row Crop with cab and MFWD - 150 HP:	0.2	150.0	40.0		**1440.0**
Disk			550.0		**550.0**
Labor			40.0	15.0	**600.0**

Total cost for disking areas to be reclaimed: **2590.0**

Area to be Ripped

			Area (ac)
Total Salt Waste areas:			**3.1**
Area of pit roads to be reclaimed	Length (ft)	Width (ft)	
	2640.0	20.0	**1.2**
			4.3

Creating safety berms or barriers around highwalls

Berms or barriers will be placed mainly around portions of the grandfathered salt mines (SM1 and SM2) near potentially hazardous areas (note that signs will also be placed near these areas)
Estimate of the length of the barrier or berm needed per mine: **1000.0**
Estimate of the length of the barrier or berm needed for both SM1 and SM2: **2000.0**

Replacing Topsoil

About 3/4 of the total disturbed area corridor to be reclaimed already has top soil. These areas just needs to be disked and planted
About 1/4 of the total disturbed area corridor to be reclaimed is estimated to require 1 foot of topsoil from nearby storage piles

	total area (acre)	1ft soil area		Volume (cu yds)
Area that needs topsoil amendments (acres):	74.6	18.6		30084.6
			cubic feet	
topsoil for salt waste piles	0.5	3.1	66864.6	2476.5
topsoil for brine ponds	1.0	1.1	47044.8	1742.4
	total topsoil volume being replaced			**34303.5**

ACREAGE TABLE

Redmond Minerals, Inc.
Redmond Minerals Mine
M/039/002 Sanpete/Sevier County
Prepared by Utah State Division of Oil, Gas & Mining

last revision 08/31/99
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-This estimate is based on reclamation plan information from the NOI received September 15, 1998; additional information received February 5, 1999; additional information received June 30, 1999, and the revised Treatments Map received August 26, 1999

Variance polygon at northern salt mine includes SM-1, OB-1, OB-2 & adjacent areas =	17.52
mine feature acreage within northern salt mine variance polygon =	10.10
adjacent affected area within northern salt mine variance polygon =	7.42
Variance areas for processing facilities in SMP-1 & SMP-2 & adjacent areas =	27.40
Variance acreage for mine dumps MD-2 (DOGM requires recla MD-1) =	1.00
Variance acreage for old mine areas OM-1 & OM-2 =	0.95
Variance acreage (no revege success std.) for CM-1, CM-2, CM-3 CM-4, CM-5, CM-6 =	7.80
Variance acreage (no revege success std.) for CW-1, CW-2, CW-3 CW-4, CW-5 =	3.28
Variance areas for roads to remain unreclaimed =	11.43
Total Variance Areas =	69.38
Estimated "grandfathered" mine feature areas included in variance requests =	12.05
(SM-1+OB-1+OB-2+OM-1+OM-2+MD-2)	
Total cross hatched reclamation areas including mine features & adjoining areas =	74.59
7.97+1 16+13 46+1 25+0 17+0 34+24.86+6.34+4 17+2 96+1 1+1 2+0 31+1 86+7 44	
Acreage for three clay hill features =	6.52
Regions are labeled by starting at upper left of Treatments Map & going clockwise through cross hatched regions	
Assuming variance features within cross hatched regions were included in hatched acreage	
Roads within cross hatched regions were not accounted for	
Cross hatched reclamation region ONE excluding mine features within =	5.58
Cross hatched reclamation region TWO excluding mine features within =	9.63
Cross hatched reclamation region THREE excluding mine features within =	9.56
Cross hatched reclamation region FOUR excluding mine features within =	6.83
Cross hatched reclamation region FIVE excluding mine features within =	0.86
Cross hatched reclamation region SIX excluding mine features within =	2.67
Cross hatched reclamation region SEVEN excluding mine features within =	5.09
Total hatched reclamation area EXCLUDING MINE FEATURES WITHIN =	40.22
Mine features being reclaimed which are not within a larger hatched area (4) =	2.95
Individual mine feature areas being reclaimed =	26.27
Roads being reclaimed (LF with 20 ft width assumed) =	2.52
TREATMENTS MAP AREA BEING RECLAIMED =	69.01
(total hatched reclamation area excluding mine features within + individual mine features+ roads)	
Areas on map with proposed revegetation variance which DOGM is requiring reclamation =	11.08
(composted manure & broadcast seeding of CM-1 thru CM-6, CW-1 thru CW-5)	
Total permit area being reclaimed =	90.09
(treatments map area +DOGM requiring reclamation +10 acre future mining)	
AFFECTED AREA = total variance areas + Treatments Map area being reclaimed =	138.39
PROPOSED TOTAL AFFECTED PERMIT AREA= AFFECTED AREA+10 acre future mining=	148.39
ESTIMATED TOTAL AFFECTED AREA (includes grandfathered & adjacent areas) =	**138.39**
ESTIMATED TOTAL AFFECTED PERMIT AREA (INCLUDES 10 ACRE FUTURE MINING)=	**148.39**
ESTIMATED TOTAL AREA INCLUDED IN VARIANCE REQUESTS =	**69.38**
ESTIMATED AREA ADJACENT TO MINE FEATURES INCLUDED IN VARIANCE REQUESTS =	**7.42**
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ROADS BEING RECLAIMED =	**2.52**
DOGM REQUIRED RECLAMATION/RESEEDING =	**11.08**
PROPOSED FUTURE MINING AREA TO BE RECLAIMED =	**10.00**
ESTIMATED TOTAL PERMIT AREA BEING RECLAIMED =	**90.09**

REDMOND M/039/002 feature name	acreage	feature cumul. total	map & DOG... "reclaimed"	not reclaimed variance	reseed no reveg std	soil salvage fert+seed	disk + . + seed	topsoil 6 fert+seed	topsoil 12 fert+seed	rip+flood fert+6+seed
SM-1	1.70	1.70		1.70						
SM-2	3.00	4.70		3.00						
SW-1	0.46	0.46	0.46			0.46		0.46		0.46
SW-2	1.10	1.56	1.10			1.10		1.10		1.10
SW-3	1.20	2.76	1.20			1.20		1.20		1.20
SW-4	0.31	3.07	0.31			0.31		0.31		0.31
BP-1	0.33	0.33	0.33			0.33			0.33	
BP-2	0.17	0.50	0.17			0.17			0.17	
BP-3	0.58	1.08	0.58			0.58			0.58	
CP-1	3.30	3.30	3.30				3.30			
CP-2	1.50	4.80	1.50				1.50			
CP-3	3.40	8.20	3.40				3.40			
CP-4	2.60	10.80	2.60				2.60			
CM-1	0.75	0.75			0.75					
CM-2	1.00	1.75			1.00					
CM-3	0.65	2.40			0.65					
CM-4	1.80	4.20			1.80					
CM-5	1.20	5.40			1.20					
CM-6	2.40	7.80			2.40					
CM-7	0.44	8.24	0.44			0.44				
CM-8	0.31	8.55	0.31			0.31				
CW-1	0.41	0.41			0.41					
CW-2	0.46	0.87			0.46					
CW-3	1.30	2.17			1.30					
CW-4	0.96	3.13			0.96					
CW-5	0.15	3.28			0.15					
clay hill 1	1.52	1.52								
clay hill 2	4.35	5.87								
clay hill 3	0.65	6.52								
GP-1	2.10	2.10	2.10			2.10				
MD-1	0.31	0.31					0.31			
MD-2	1.00	1.31		1.00						
MD-3	0.36	1.67	0.36			0.36				
NM-1	0.25	0.25	0.25			0.25				
OM-1	0.45	0.45		0.45						
OM-2	0.50	0.95		0.50						
OB-1	3.00	3.00		3.00						
OB-2	5.40	8.40		5.40						
OB-3	0.27	8.67	0.27				0.27			
OB-4	0.37	9.04	0.37				0.37			
OB-5	0.50	9.54	0.50				0.50			
OB-6	0.54	10.08	0.54				0.54			
OB-7	0.66	10.74	0.66				0.66			
GD-1	0.34	0.34	0.34							
GD-2	1.50	1.84	1.50			1.50				
GD-3(SMP-2)	0.20	2.04		in SMP-2						
future mining	10.00	not on map	not on map				10.00			
exploration area	1.16	1.16	1.16				1.16			
SMP-1	8.70	8.70		8.70						
SMP-2	18.70	27.40		18.70						
remaining road	11.43	11.43		11.43						
reclaimed roads	2.52	13.95	2.52							
total	**108.26**	**NA**	**26.27**	**53.88**	**11.08**	**9.11**	**24.61**	**3.07**	**1.08**	**3.07**
REDMOND M/039/002	acreage	feature cumul. total	map feature & DOGM "reclaimed"	reseed no reveg std.	no revege variance	soil salvaged fert+seed	disk + fert + seed	topsoil 6 fert+seed	topsoil 12 fert+seed	rip+flood fert+6+seed